IN THE CLAIMS:

Please amend claims 1-22 and add new claims 23-35 as follows.

1. (Currently Amended) A method for providing enhanced utilization of code resource in a cellular systems, ~~preferably~~ comprising ~~a~~ terrestrial cellular code division multiple access ~~CDMA~~ systems, wherein a base station comprises an antenna system which generates several beams, the method comprising:~~and~~

using a ~~Spreading Factor~~spreading factor (SF) of the root channelization code ~~sets~~ to set an upper limit on the maximum bit rate; and~~,~~ ~~wherein~~

selecting the spreading factor ~~Spreading Factor~~ of the root channelization code ~~is selected~~ according to the set of minimum spreading factors ~~Spreading Factors~~ assumed for the different beams.

2. (Currently Amended) ~~Method~~ The method according to claim ~~1~~3, wherein the root channelization code is the root physical downlink shared channel ~~PDSCH~~ code ~~(PDSCH = Physical Downlink Shared Channel)~~.

3. (Currently Amended) A method for providing enhanced utilization of code resource in a cellular systems, comprising terrestrial cellular code division multiple access systems, wherein a base station comprises an antenna system which generates several beams, the method comprising:

using a spreading factor (SF) of the root channelization code to set an upper limit on the maximum bit rate; and

selecting the spreading factor of the root channelization code according to the set of minimum spreading factors assumed for the different beams~~Method according to claim 1~~, wherein in a case where the channels under a same scrambling code, but different beams, share the same root channelization code, a minimum assumed ~~Spreading Factor~~spreading factor for beam number m (SF_{min}[m]) is defined according to the following equation:

$$SF_{DSCHroot} = f(\{SF_{\min}[m]\}_{m \in SC}),$$

where $SF_{DSCHroot}$ is the minimum assumed ~~Spreading Factor~~spreading factor of the root channelization code of a down link shared channel (DSCH), $\{SF_{min}[m]\}_{m \in SC}$ is the set of assumed minimum SFs for the beams transmitted under the same scrambling code, where the set SC contains the beam numbers which are transmitted under the same scrambling code.

4. (Currently Amended) A method for providing enhanced utilization of code resource in a cellular systems, comprising terrestrial cellular code division multiple

access systems, wherein a base station comprises an antenna system which generates several beams, the method comprising:

using a spreading factor (SF) of the root channelization code to set an upper limit on the maximum bit rate; and

selecting the spreading factor of the root channelization code according to the set of minimum spreading factors assumed for the different beams~~Method according to claim 1~~, wherein $SF_{DSCHroot}$ is calculated according to the equation

$$SF_{DSCHroot} = f\left(\{SF_{\min}[m]\}_{m\in SC}\right)$$
$$= Min\{\{SF_{\min}[m]\}_{m\in SC}\}/Q$$

with $Q=2^n$, where n is a positive integer, ~~i.e.~~ $n\in[0,1,2,3....]$.

5. (Currently Amended) ~~Method~~ The method according to claim 4, wherein Q equals or is ~~preferably~~ smaller than~~, e.g. half,~~ the number of beams sharing the same root physical downlink shared channel ~~PDSCH~~ code, the beam with the minimum assumed ~~SF~~ spreading factor being ~~allowed~~ configured to transmit at the maximum allowed bit rate, while the other channels under different beams but same scrambling code ~~can be~~are active at lower bit rates.

6. (Currently Amended) ~~Method~~ The method according to claim 3, wherein the function $f()$ is selected in such a manner that simultaneous transmission in all the beams under the same scrambling code is possible with the minimum assumed ~~Spreading Factor~~spreading factor.

7. (Currently Amended) ~~Method~~ The method according to claim ~~1~~3, wherein packet scheduling for parallel beams is provided in such a manner that not all beams transmit on downlink~~, e.g. PDSCH~~ comprising the physical downlink shared channel, with high or maximum bit rates (low ~~Spreading Factor~~spreading factor) simultaneously.

8. (Currently Amended) ~~Method~~ The method according to claim 7, wherein packet scheduling in the individual beams is coordinated so that only one of the beams is transmitting with a high bit rate during the same time period, and different time periods comprising~~, i.e.~~ scheduling slots, are balanced so they require nearly the same amount of code resources.

9. (Currently Amended) ~~Method~~ The method according to claim 7, wherein the packet scheduling is based on quality-of-service (QoS) so that ~~packet~~ packets are prioritized according to QoS attributes.

10. (Currently Amended) ~~Method~~ The method according to claim ~~1~~3, wherein the selection of the ~~Spreading Factors~~spreading factor, and/or packet scheduling is being applied to the downlink, ~~preferably the PDSCH (PDSCH =~~ comprising physical downlink shared channel~~Physical Downlink Shared Channel)~~, or to high speed downlink packet access~~High Speed Downlink Packet Access (HSDPA)~~.

11. (Currently Amended) A system for providing enhanced utilization of code resource in ~~a~~ cellular systems, ~~preferably~~ comprising a terrestrial cellular ~~CDMA~~ code division multiple access systems, the system comprising:

a base station having an antenna system ~~adapted~~ configured to generate several beams, wherein a ~~Spreading Factor~~ spreading factor (SF) of the root channelization code sets an upper limit on the maximum bit rate~~,~~; ~~comprising~~ and

a selecting ~~means~~unit ~~(1) for selecting~~configured to select the ~~Spreading Factors~~spreading factor of the root channelization code according to the set of minimum ~~Spreading Factors~~spreading factors assumed for the different beams.

12. (Currently Amended) ~~System~~ The system according to claim ~~11~~13, wherein the root channelization code is the root ~~PDSCH~~ physical downlink shared channel code ~~(PDSCH = Physical Downlink Shared Channel)~~.

13. (Currently Amended) A system for providing enhanced utilization of code resource in cellular systems, comprising a terrestrial cellular code division multiple access systems, the system comprising:

a base station having an antenna system configured to generate several beams, wherein a spreading factor (SF) of the root channelization code sets an upper limit on the maximum bit rate; and

a selecting unit configured to select the spreading factor of the root channelization code according to the set of minimum spreading factors assumed for the different beams~~System according to claim 11~~, wherein in a case where the channels under a same scrambling code, but different beams, share the same root channelization code, the selection ~~means~~ unit is ~~adapted~~ configured to select a minimum assumed ~~Spreading Factor~~spreading factor, a minimum assumed ~~Spreading Factor~~spreading factor for beam number m (SF_{min}[m]) being defined according to the following equation:

$$SF_{DSCHroot} = f\left(\{SF_{\min}[m]\}_{m\in SC}\right),$$

where $SF_{DSCHroot}$ is the minimum assumed ~~Spreading Factor~~spreading factor of the root channelization code of a down link shared channel (DSCH), $\{SF_{min}[m]\}_{m\in SC}$ is the set of assumed minimum SFs for the beams transmitted under the same scrambling code, where the set SC contains the beam numbers which are transmitted under the same scrambling code.

14. (Currently Amended) A system for providing enhanced utilization of code resource in cellular systems, comprising a terrestrial cellular code division multiple access systems, the system comprising:

a base station having an antenna system configured to generate several beams, wherein a spreading factor (SF) of the root channelization code sets an upper limit on the maximum bit rate; and

a selecting unit configured to select the spreading factor of the root channelization code according to the set of minimum spreading factors assumed for the different beams~~System according to claim 11~~, comprising calculating means ~~(1)~~ for calculating $SF_{DSCHroot}$ according to the equation

$$SF_{DSCHroot} = f\left(\left\{SF_{\min}[m]\right\}_{m\in SC}\right)$$
$$= Min\left\{\left\{SF_{\min}[m]\right\}_{m\in SC}\right\}/Q'$$

with $Q=2^n$, where n is a positive integer, ~~i.e.~~ $n\in[0,1,2,3....]$.

15. (Currently Amended) ~~System~~ The system according to claim 14, wherein Q equals or is ~~preferably~~ smaller than~~, e.g. half,~~ the number of beams sharing the same root physical downlink shared channel ~~PDSCH~~ code, the beam with the minimum assumed SF being allowed to transmit at the maximum allowed bit rate, while the other channels under different beams but same scrambling code can be active at lower bit rates.

16. (Currently Amended) ~~System~~ The system according to claim 13, wherein the function *f*() is selected in such a manner that simultaneous transmission in all the beams under the same scrambling code is possible with the minimum assumed ~~Spreading Factor~~spreading factor.

17. (Currently Amended) ~~System~~ The system according to claim ~~11~~13, further comprising:

a packet scheduler ~~(5) for providing~~configured to provide packet scheduling for parallel beams in such a manner that less than all beams~~, preferably only one beam,~~ are allowed to transmit on the downlink~~, e.g. PDSCH,~~ comprising the physical downlink shared channel with high bit rates (low ~~Spreading Factor~~spreading factor) simultaneously.

18. (Currently Amended) ~~System~~ The system according to claim 17, wherein the packet scheduler ~~(5)~~ is ~~adapted~~ configured to coordinate packet scheduling in the individual beams so that only one of the beams is transmitting with a high bit rate during the same time period, and different time periods~~, i.e.~~ comprising scheduling slots, are balanced so they require nearly the same amount of code resources.

19. (Currently Amended) ~~System~~ The system according to claim 17, wherein the packet scheduler ~~(5)~~ is ~~adapted~~ configured to base packet scheduling on quality-of-service (QoS) so that packet are prioritized according to QoS attributes.

20. (Currently Amended) ~~System~~ The system according to claim ~~11~~13, wherein the system is adapted to apply the selection of the Spreading Factor, and/or packet scheduling to the downlink, preferably the ~~PDSCH (PDSCH =~~physical downlink shared channel~~ Physical Downlink Shared Channel)~~, or to high speed downlink packet access~~High Speed Downlink Packet Access (HSDPA)~~.

21. (Currently Amended) ~~Network~~ A network element to be used in a system for providing enhanced utilization of code resource in a cellular system, said network element~~,~~ comprising:

a selecting ~~means (1) for selecting~~unit configured to select a ~~Spreading Factor~~spreading factor of a root channelization code according to a set of minimum ~~Spreading Factors~~spreading factors assumed for different beams, wherein in a case where the channels under a same scrambling code, but different beams, share the same root channelization code, a minimum assumed spreading factor for beam number m (SF_{min}[m]) is defined according to the following equation:

$$SF_{DSCHroot} = f(\{SF_{\min}[m]\}_{m \in SC}),$$

where $SF_{DSCHroot}$ is the minimum assumed spreading factor of the root channelization code of a down link shared channel (DSCH), $\{SF_{min}[m]\}_{m \in SC}$ is the set of assumed minimum SFs for the beams transmitted under the same scrambling code, where the set SC contains the beam numbers which are transmitted under the same scrambling code.

22. (Currently Amended) Network element as defined in claim 21, ~~comprising~~ further comprising:

a packet scheduler configured to provide ~~(5) for providing~~ packet scheduling for parallel beams in such a manner that less than all beams~~, preferably only one beam,~~ are allowed to transmit on the downlink~~, e.g. PDSCH,~~ comprising the physical downlink shared channel with high bit rates (low ~~Spreading Factor~~spreading factor) simultaneously.

23. (New) A system for providing enhanced utilization of code resource in cellular systems, comprising a terrestrial cellular code division multiple access systems, the system comprising:

a base station having an antenna system for generating several beams, wherein a spreading factor of the root channelization code sets an upper limit on the maximum bit rate; and

a selecting means for selecting the spreading factor of the root channelization code according to the set of minimum spreading factors assumed for the different beams.

24. (New) The method according to claim 4, wherein the root channelization code is the root physical downlink shared channel code.

25. (New) The method according to claim 4, wherein packet scheduling for parallel beams is provided in such a manner that not all beams transmit on downlink comprising the physical downlink shared channel, with high or maximum bit rates (low spreading factor) simultaneously.

26. (New) The method according to claim 25, wherein packet scheduling in the individual beams is coordinated so that only one of the beams is transmitting with a high bit rate during the same time period, and different time periods comprising scheduling slots, are balanced so they require nearly the same amount of code resources.

27. (New) The method according to claim 25, wherein the packet scheduling is based on quality-of-service (QoS) so that packets are prioritized according to QoS attributes.

28. (New) The method according to claim 4, wherein the selection of the spreading factor, and/or packet scheduling is being applied to the downlink, comprising physical downlink shared channel, or to high speed downlink packet access.

29. (New) The system according to claim 14, wherein the root channelization code is the root physical downlink shared channel code.

30. (New) The system according to claim 14, further comprising:

a packet scheduler configured to provide packet scheduling for parallel beams in such a manner that less than all beams are allowed to transmit on the downlink comprising the physical downlink shared channel with high bit rates (low spreading factor) simultaneously.

31. (New) The system according to claim 30, wherein the packet scheduler is configured to coordinate packet scheduling in the individual beams so that only one of the beams is transmitting with a high bit rate during the same time period, and different

time periods comprising scheduling slots, are balanced so they require nearly the same amount of code resources.

32. (New) The system according to claim 30, wherein the packet scheduler is configured to base packet scheduling on quality-of-service (QoS) so that packet are prioritized according to QoS attributes.

33. (New) The system according to claim 14, wherein the system is adapted to apply the selection of the Spreading Factor, and/or packet scheduling to the downlink, preferably the physical downlink shared channel, or to high speed downlink packet access.

34. (New) A network element to be used in a system for providing enhanced utilization of code resource in a cellular system, said network element comprising:

a selecting unit configured to select a spreading factor of a root channelization code according to a set of minimum spreading factors assumed for different beams, wherein $SF_{DSCHroot}$ is calculated according to the equation

$$SF_{DSCHroot} = f\left(\{SF_{\min}[m]\}_{m\in SC}\right)$$
$$= Min\{\{SF_{\min}[m]\}_{m\in SC}\}/Q'$$

with $Q=2^n$, where n is a positive integer, $n \in [0,1,2,3....]$.

35. (New) Network element as defined in claim 34, further comprising:

a packet scheduler configured to provide packet scheduling for parallel beams in such a manner that less than all beams are allowed to transmit on the downlink comprising the physical downlink shared channel with high bit rates (low spreading factor) simultaneously.